



①9 BUNDESREPUBLIK
DEUTSCHLAND



DEUTSCHES
PATENTAMT

⑫ **Offenlegungsschrift**
⑩ **DE 42 31 649 A 1**

⑤1 Int. Cl.⁵:
F 16 K 31/64
F 16 K 11/00
F 01 P 7/16
F 28 F 27/00

②1 Aktenzeichen: P 42 31 649.9
②2 Anmeldetag: 22. 9. 92
④3 Offenlegungstag: 31. 3. 94

DE 42 31 649 A 1

⑦1 Anmelder:
Henschel Kunststofftechnik GmbH, 29693
Hodenhagen, DE

⑦2 Erfinder:
Henschel, Adolf, 3035 Hodenhagen, DE

Prüfungsantrag gem. § 44 PatG ist gestellt

⑤4 Dre Wege-Thermostatventil für einen Kühl- bzw. Heizkreislauf eines Automobils

⑤7 Es wird ein Dre Wege-Thermostatventil für einen Kühlkreislauf mit Umgehungsmöglichkeit des Kühlers, für einen Verbrennungsmotor aufgezeigt, mit einem Ventilgehäuse, in dem eine Öffnung für den Eintritt des Kühlmittels vom Motor, eine Austrittsöffnung zum Kühler und eine Austrittsöffnung zum Motor angeordnet sind. Eine Thermostat-Kapsel, deren Länge temperaturabhängig veränderbar ist, steuert ein Ventilelement.
Das Ventilelement weist einen Ventilschieber auf der seitlichen die Thermostat kapsel freigebende Öffnungen besitzt, über die die Eintrittsöffnung und die zweite Austrittsöffnung miteinander verbindbar sind. Eine einfache Montage des Ventils sowie eine Auswechselung der Thermostat kapsel ohne Zerstörung irgendwelcher Bauteile wird dadurch erreicht, daß ein Federführungsteil für die Aufnahme einer Druckfeder vorgesehen wird, daß an dem Federführungsteil an seiner der Thermostat kapsel zugewandten Seite Einraststege angeformt sind und daß der Ventilschieber an seinem dem Federführungsteil zugewandten Ende Einrastöffnungen für die Aufnahme der an dem Federführungsteil angeformten Einraststege, aufweist.

DE 42 31 649 A 1

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

BUNDESDRUCKEREI 02. 94 408 013/27

6/41

The invention relates to a three-way thermostat valve of the genus as described in the preamble of the claim.

In the DE-OS 32 26 988 a three-way thermostat valve becomes described which from a valve slide with fitted thermostat cap and a cage employment consists and in one, of an upper nozzle and a bottom part building up housings disposed is. A coil spring works against the piston of a thermostat cap and supports themselves at the valve slide and a cage employment off.

The assembly of such a designed valve designed itself extremely difficult, because the thermostat cap into the gate valve placed and both aggregates against the spring pressure compressed to then become to have. In the pressed together state then the upper connecting piece part must become properly matching fitted, so that the spigot at the piston of the thermostat cap intervenes in a blind bore, whereby to be recognized is not whether the also actual spigot in the blind bore is. For the assembly therefore special tools are essential.

The upper connecting piece part is pressed with a formed collar into an annular collar at the bottom part.

The formed collar must, around a durable connection of both parts to guarantee into the annular collar of the bottom part to be bonded. A bond has however the disadvantage that a replacement of the thermostat cap is not possible without destruction of the entire unit, D. h. if an operational disturbance arises must the entire aggregate exchanged become.

The object of the invention a three-way valve is as to be improved shown in above holding out in such a way that a very simple assembly which can be accomplished by auxiliary workers without special tool is possible. Further the Herstellun of the valve is to become simplified. The thermostat cap should be more replaceable easy.

The object becomes dissolved by the features in connection with the features of preamble, laid down in the claim in the characterizing portion.

The leadership part and the valve slide point engaging bar and/or. - openings up, so that with an easy pressure pressure against a spring both parts safe and connected easy with one another to become to be able. The thermostat cap becomes bolted with one another thereafter without spring pressure into the valve slide inserted and the casing parts, so that can become replaced without large effort and a destruction of the components the thermostat cap.

An embodiment becomes subsequent explained in the drawing shown and:

Show

Fig. 1 a thermostat valve with the individual components,

Fig. 2 the valve in closed condition,

Fig. 3 the valve in half-opened state.

The thermostat valve is in a valve housing existing from an upper portion 1 and a lower part 2 disposed.

The valve consists of the thermostat capsule 3, the valve slide 4, the leadership part 5 and the spring 6.

In the lower part 2 an opening is 7 disposed for the cooling liquid coming from the interior of the motor. The upper portion 1 exhibits an opening 8, fixed at which a connecting member is to the terminal to the entrance of the radiator. To the outlet port 9 is likewise a piping connected. In the recess 10 a temperature scanner not shown disposed becomes.

The upper portion 1 becomes 2 bolted by means of screws 11 with the lower part. The seal of the upper portion in relation to the lower part becomes 12 achieved by the O ring.

In Fig. 2 assembled three-ways a thermostat valve in the closed condition shown becomes. The valve slide 4 lies close with its O ring 13 against the shoulder 14 of the upper casing part 1 and seals thus the opening 8.

By the arrows 15 and 16 in Fig. 2 the cooling agent river shown becomes. The cooling liquid flows on the basis of the opening 7 in the lower housing 12 by the down open valve slide 5 and by opening 17 of the valve slide 5 upward around the thermostat cap 3 around for opening 9. By washing around the thermostat cap the wax in the thermostat cap expands and squeezes 3 with an heated liquid the guide pin out 18 from the capsule. The guide pin intervenes in the shoulder 19 of the upper casing part 1, so that becomes 4 downward guided by driving out the guide pin 18 the valve slide, as in Fig. 3 shown in the one half-closed valve to see is.

Now the opening is 9 8 connected with the opening. The coolant process becomes by arrow 20 in Fig. 3 shown. Also in this case the thermostat cap 3 as by the arrow section 20a shown becomes spaciouly washed around, so that by the temperature of the liquid the guide pin 18 of the capsule 3 corresponding is led out far from the capsule 3, whereby the valve opens or closes (Fig. 2).

The opening of the valve made by the fact that the capsule 3 rests against the shoulder 21 of the valve slide 4 and thus the valve slide 4 into the Fig. 3 position shown moved, so that the liquid of the opening 8 at the opening 9 can arrive.

Becomes then by other driving out of the guide pin 18 the valve slide 4 with its bottom part 22 against the shoulder 23 (Fig. 3) driven, the valve complete, so that then only a liquid process closes, as shown by arrow 20, 20a possible is.

The assembly of the three-way valve made the corresponding sequence as shown in Fig. 1. First the spring becomes 6 5 inserted into the leadership part. Then the valve slide 4 against the spring pressure into the leadership part 5 coaxial is slid, so that the engaging bars 24 of the leadership part 5 engage into the engaging openings 25 of the valve slide 4, whereby the assembly of both parts is ended.

Afterwards the thermostat cap becomes 3 into the valve slide 4 of the inserted against the shoulder 21 valve slide 4 pushes away. Afterwards will above composed components into the lower casing part 2 inserted and the upper casing part 1 becomes by means of screws 11 with the lower casing part 2 bolted. Around the assembly more other to facilitate abutment 19 for the guide pin 18 a conical openable recess exhibits itself, so that the guide pin can become 18 troublefree received with the assembly.